

REMARKS/ARGUMENTS

Claims 1-35 are pending in the present application and stand rejected.

Claims 1, 11, and 21 are rejected under 35 U.S.C. 112 as being indefinite.

Claims 1-8, 11-18, and 21-28 are rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent 6,396,384 to Bonomi et al. (hereinafter "Bonomi") in view of United States Patent 5,561,663 to Klausmeier.

Claim 31 is rejected under 35 U.S.C. §103(a) as being unpatentable over Bonomi in view of United States Patent 6,643,288 to Santhanakrishnan.

Claims 1, 6, 11, 16, 21, and 26 are amended. Claim 33-35 are canceled without prejudice or disclaimer. Support for the claim amendments can be found throughout the application and, among other places, at page 24-30 and with reference to Figs. 4-6. No new matter has been added.

Rejections under Section 112

Claims 1, 11, and 21 are amended and it is respectfully submitted that the indefiniteness rejections are not applicable to the amended claims. Accordingly, withdrawal of the rejections under 35 U.S.C. 112 is respectfully requested.

Rejections under Section 103

A. Claims 1, 11, 21

Claims 1, 11, and 21 are rejected as unpatentable over Bonomi in view of Klausmeier. According to the Examiner, Bonomi teaches all of the claim limitations except for adjusting the credit of the first connection. See, Office Action at page 5. The Examiner argues that Klausmeier supplies the missing limitation and that the combination of these two references thus renders the claims obvious. Applicants respectfully disagree with this conclusion and have made amendments to more fully recite the claimed invention. For brevity, the following discussion refers specifically to the limitations of claim 1. It will be noted, however, that claim

11 and claim 21 include similar limitations and that all claims were rejected under the same rationale. Thus, the following discussion is applicable to each of claims 1, 11, and 21.

Claim 1 recites a method of performing a virtual network connection merge including first and second lists. As set forth in the claim, "credits are allocated to the ready connections of the *first list* through one or more rounds of bandwidth allocation such that a ready network connection is removed from the first list in a round of bandwidth allocation when it has been allocated credits at least equal to its relative frequency value." The method comprises "assembling one or more data units from data traffic of ready network connections in a *second list* comprising ready network connections that have been allocated credits through the one or more bandwidth allocation rounds." The method also comprises "adjusting the credit of the first connection based upon the data unit transmitted, wherein after transmitting the chosen data unit the first connection is removed from the second list if it is no longer a ready network connection or if its credits are less than zero, otherwise the first connection is moved to the tail of the second list." Applicants respectfully submit Bonomi in view of Klausmeier does not teach or suggest these elements.

Bonomi discusses a two-step scheduling process. The first step is selecting a group to transmit on a particular port. The second step is determining a bucket within the group from which cells will be transmitted. Thus, Bonomi discusses two topics: "group selection" and "bucket selection". See, Bonomi at col. 11, lines 41-51 ("The scheduling of a cell under the hierarchical scheduling scheme of FIG. 3 entails two hierarchical steps: (1) determining a group, and (2) determining a bucket in the determined group with a cell ready for transmission. The general considerations of group selection and bucket selection will be clear from the description below.")

The first step, selecting a group, is based upon weights. As Bonomi indicates, the frequency with which a group is selected is based upon the weight assigned to the group. See, Bonomi at col. 12, lines 5-18 ("Thus, a group can be selected using one of several schemes such as SCFQ as a first step in the hierarchical process"). It will be noted that the "weights" are associated with groups, not individual connections. Bonomi does not disclose that "weights" are allocated to groups in rounds until a particular value is reached, or that groups are added to a list

and removed from the list upon reaching the particular value. In other words, group weighting simply controls the frequency with which groups are selected for transmission. It is a fixed fraction of port bandwidth (e.g., 1/8, 2/8, 5/8) and is not adjusted in any way when cells are transmitted from connections in the group.

The second step, determining a bucket within the selected group, has two variations depending upon whether the connection is shaped or non-shaped. In the case of a non-shaped connection, a predetermined "bucket gap" is associated with each connection. See, Bonomi at col. 12, lines 38-44. The bucket gap represents how many transmission cycles away from the currently served bucket the connection is placed. The bucket gap is a time interval such that a larger bucket gap means lower bandwidth and a smaller bucket gap means higher bandwidth. See, Bonomi at col. 12, lines 40-47. The bucket gap is a fixed value for each connection in the group. For example, connections 510, 520, 530 have bucket gaps of 2, 4, and 3 respectively and these gaps control which buckets their respective cells are placed into. See, Bonomi at Figs. 5A-5D. The bucket gap is presumably set according to the connection's QoS parameters and does not change while the connection remains part of a particular group. The bucket gap is not adjusted based upon transmission of cells; connections are not allocated "bucket gap" in rounds, and the bucket gap clearly cannot be less than zero.

Thus, Applicants respectfully disagree with the Examiner that Bonomi's group weights can be equated with credits as set forth in the relevant claim language. See, Office Action at page 17. As noted above, Bonomi's weights are fixed values and are used to select groups. They are not allocated in rounds, they do not change over time, and they are not adjusted based upon data units transmitted by particular connections. Similarly, Bonomi's bucket gaps correspond to fixed intervals of time. Applicants therefore submit that Bonomi in no way discloses that "credits are allocated to the ready connections of the first list through one or more rounds of bandwidth allocation such that a ready network connection is removed from the first list in a round of bandwidth allocation when it has been allocated credits at least equal to its relative frequency value." It also follows that Bonomi does not teach or suggest adjusting the credit of a connection based upon the data unit transmitted because group weights are not

adjusted and are not related to data units transmitted by individual connections. At page 5 of the Office Action, the Examiner acknowledges that Bonomi does not disclose adjusting credits.

However, the Examiner cites Klausmeier at col. 3, lines 44-48 for the adjusting step. In the passage cited, Klausmeier discusses that rate control can be performed using a credit accumulation system. However, Klausmeier does disclose that ready network connections in a first list are allocated credits in rounds of bandwidth and that they are removed from the first list when they have been allocated credits at least equal to their respective relative frequency values. Klausmeier similarly fails to disclose that ready network connections which have been allocated credits through rounds of bandwidth allocation are added to a second list. Finally, Klausmeier does not disclose that such connections are either removed from the second list or moved to the tail of the second list as claimed.

Accordingly, Applicants respectfully submit that Bonomi in view of Klausmeier fails to teach or suggest the claimed allocating, assembling and adjusting steps including first and second lists as well as bandwidth allocation rounds. Specifically, the combination of references fails to disclose "allocating credits to ready network connections ... wherein the ready network connections comprise a first list and credits are allocated to the ready connections of the first list through one or more rounds of bandwidth allocation such that a ready network connection is removed from the first list in a round of bandwidth allocation when it has been allocated credits at least equal to its relative frequency value; assembling one or more data units from data traffic of ready network connections in a second list comprising ready network connections that have been allocated credits through the one or more bandwidth allocation rounds...adjusting the credit of the first connection based upon the data unit transmitted, wherein after transmitting the chosen data unit the first connection is removed from the second list if it is no longer a ready network connection or if its credits are less than zero, otherwise the first connection is moved to the tail of the second list." It is therefore respectfully submitted that Bonomi in view of Klausmeier cannot support a prima facie case of obviousness.

In addition, Applicants respectfully submit that there is no motivation to combine references and no reasonable expectation of success in the combination. As noted previously, Bonomi discusses allocating bandwidth in terms of group weights and bucket gaps. These

values control group selection and cell spacing, respectively. Klausmeier, on the other hand, mentions a credit accumulation system that includes credit balances. The credit balances change over time and are used to qualify a connection to be served. A person of ordinary skill in the art would not be motivated to combine references because Klausmeier's credit balances cannot be added to either Bonomi's group weights or bucket gaps in a meaningful way. In addition, even if combined, Bonomi in view of Klausmeier fails to disclose each and every claimed element and would not produce the features and limitations of the claimed invention as previously discussed. Accordingly, Applicants respectfully request reconsideration and allowance of claims 1, 11, and 21.

B. Claims 2-10, 12-20, 22-30

Claims 2-10, 12-20, 22-30 depend from claims 1, 11, and 22 respectively and each dependent claim incorporates all of the limitations of its respective base claim. If an independent claim is non-obvious under 35 U.S.C. §103, then any claim depending therefrom is also non-obvious. Accordingly, claims 2-10, 12-20, 22-30 are believed allowable for at least the reason that they depend from allowable base claims.

C. Claim 31

Claim 31 recites a method of performing a virtual network connection merge comprising "assigning a credit to each ready network connection in the plurality of network connections in the first list in a round robin sequential fashion...when a ready network connection is assigned credits at least equal to its relative frequency value, removing the ready network connection from the first list; continuing to assign a credit to each ready network connection in the plurality of network connections in the first list in a round robin sequential fashion until the first list is empty, wherein when a network connection is assigned credits at least equal to its relative frequency value, removing the ready network connection from the first list" and was rejected under Bonomi in view of Santhanakrishnan.

As previously discussed, Bonomi does not disclose the use of credits in connection with allocating bandwidth to individual connections and, in particular, does not teach or suggest assigning credits to network connections or that determining a chosen data unit

depends upon the credit of a connection. See, above. Applicants respectfully submit that Santhanakrishnan does not cure these deficiencies.

Santhanakrishnan discusses manipulating SPVx connections using a counter. An aging counter is incremented each time a connection is attempted to be established. The aging counter is reset if a connection is not established after a predetermined number of attempts. When an SPVx connection is established, the connection is deleted from a list of connection in memory. Santhanakrishnan does not mention assigning credits to ready network connections in a first list, nor does it disclose removing a connection from the first list when it has been assigned credits at least equal to its relative frequency value. Bonomi in view of Santhanakrishnan therefore does not teach or suggest at least the claim limitations recited above. Accordingly, Applicants respectfully submit that the combination of references does not support a prime facie case of obviousness.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 858-350-6100.

Respectfully submitted,

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